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Air Liquide > Gas Encyclopedia



Gas Encyclopedia

The Air Liquide Gas Encyclopedia ensures that you can quickly find full information on more than 135 gas molecules.

Air Liquide and its research teams are making reference content on gases available to students, scientists, professional users, and everyone interested.

Thanks to the Air Liquide Gas Encyclopedia, you will be able to:

- Find all of the physical properties of gases (the main physical characteristics of molecules in their solid, liquid and gaseous or supercritical states),
- Calculate the correspondence between the gaseous and liquid phase for a given weight or volume of gas,
- Calculate the liquid phase density all along the liquid-vapor balance curve for [nitrogen](#), [carbon dioxide](#), [argon](#), [hydrogen](#) or [oxygen](#),
- Download the vapor pressure curve for some gases,
- View the [Safety Datasheets \(SDS\)](#),
- Discover the main applications of these gases in industry and healthcare,
- Check material compatibility.

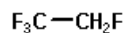
Using the Encyclopedia

You can run a search by entering a chemical formula, a UN transportation code or by choosing a molecule name from the drop-down menu. Having trouble? Refer to our [User Guide](#).

Gas selection

Chemical Formula	Molecule name	UN Transportation Code
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="button" value="OK"/>	1,1,1,2-Tetrafluoroethane (R134A) ▼	<input type="button" value="OK"/>

After selecting a molecule, you can choose the units in which you want displayed numeric values.



H₂FC-CF₃
 1,1,1,2-Tetrafluoroethane (R134A)
 CAS Number : 811-97-2
 UN3159

;1,1,1,2-Tetrafluoroethane; Freon 134a; Ethane, 1,1,1,2-tetrafluoro-; Halocarbon 134a; 1,2,2,2-Tetrafluoroethane; HFC-134a;

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- ▶ [Major Hazards](#)

Gas Encyclopedia

[Safety Datasheets \(SDS\)](#)
[User Guide](#)
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The Gas Encyclopedia app for tablet



Available in **French** and **English**
 Available for **free** download



Application for iPad: Demo



To discover all of the features offered by the Gas Encyclopedia for iPad application.

▶ [Watch the demo](#)

Discover our products



You are a research lab? To supply or calibrate your analyzer with pure gas or a mixture, refer to our catalog of gases and equipment.

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Main applications

Industries	Applications
Other industries	Tetrafluoroethane (R134A) is a blend component for refrigeration. It also a propellant for aerosol and a blowing agent for extruded polystyrene foams. It replaces the CFC R12 (dichlorodifluoromethane) and in few years the HCFC R22 (chlorodifluoromethane).
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Gas Properties

Molecular Weight	Molecular weight : 102.03 g/mol
Solid phase	Melting point (1.013 bar) : -101 °C
Liquid phase	Liquid density (1.013 bar and 25 °C (77 °F)) : 1206 kg/m ³ Boiling point (1.013 bar) : -26.55 °C Latent heat of vaporization (1.013 bar at boiling point) : 215.9 kJ/kg Vapor pressure (at 20 °C or 68 °F) : 5.7 bar Vapor pressure (at 5 °C or 41 °F) : 3.5 bar Vapor pressure (at 15 °C or 59 °F) : 4.9 bar Vapor pressure (at 50 °C or 122 °F) : 13.2 bar
Critical point	Critical temperature : 100.95 °C Critical pressure : 40.6 bar Critical density : 512 kg/m ³
Triple point	Triple point temperature : -103.3 °C
Gaseous phase	Gas density (1.013 bar at boiling point) : 5.28 kg/m ³ Gas density (1.013 bar and 15 °C (59 °F)) : 4.25 kg/m ³ Compressibility Factor (Z) (1.013 bar and 15 °C (59 °F)) : 1 Specific gravity : 3.25 Specific volume (1.013 bar and 15 °C (59 °F)) : 0.235 m ³ /kg Heat capacity at constant pressure (Cp) (1.013 bar and 25 °C (77 °F)) : 0.08754 kJ/(mol.K)
Miscellaneous	Solubility in water (1.013 bar and 25 °C (77 °F)) : 0.21 vol/vol
Go back to choosing the units	
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Major Hazards

UN Number : UN3159
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Selection of the units

You can choose the units in which the values are displayed. By default, SI units are selected.	
Quantity	Units
Mass	<input checked="" type="radio"/> kg <input type="radio"/> lb <input type="radio"/> g
Volume	<input checked="" type="radio"/> m ³ <input type="radio"/> ft ³ <input type="radio"/> l
Pressure	<input checked="" type="radio"/> bar <input type="radio"/> psi <input type="radio"/> kPa
Temperature	<input checked="" type="radio"/> °C <input type="radio"/> °F <input type="radio"/> K <input type="radio"/> °R
Density	<input checked="" type="radio"/> kg/m ³ <input type="radio"/> lb/ft ³ <input type="radio"/> mol/l <input type="radio"/> (lb-mol)/ft ³

Enthalpy

☒ kJ/kg ☐ Btu/lb ☐ kJ/mol ☐ kcal/kg ☐ kcal/mol ☐ Btu/lb-mol

Heat Capacity

☒ kJ/(mol.K) ☐ Btu/(lb.°F) ☐ kJ/(kg.K) ☐ Btu/(lb-mol.°F) ☐ kcal/(kg.K)

☐ cal/(mol.K) ☐ J/(mol.K)

Viscosity

☒ Poise ☐ lb/(ft.s) ☐ µPa.s ☐ Pa.s

Thermal Conductivity

☒ mW/(m.K) ☐ Btu.ft/(h.ft².°F) ☐ cal.cm/(h.cm².°C) ☐ W/(m.K)

☐ (cal.cm)/(s.cm².°C)

Concentration

☒ vol % ☐ vol ppm ☐ vol/vol

Solubility

☒ vol/vol ☐ lb/ft³ ☐ (lb-mol)/ft³ ☐ mol/l ☐ g/l

Specific volume

☒ m³/kg ☐ ft³/lb ☐ l/mol ☐ ft³/lb-mol

[Top of the page](#) [Click to change the values](#)

